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EXAMINER	
TRUONG, CAM Y T	
ART UNIT	PAPER NUMBER
2162	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/727,176	LO ET AL.	
	Examiner	Art Unit	
	Cam Y T. Truong	2162	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 January 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) *38-39* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7/3/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant has amended claims 1, 10, 27, 31-39 in the amendment filed on 1/16/2007.

Applicant's election with traverse of group I claims 1-37 in the reply filed on 1/16/2007 is acknowledged. The traversal is on the ground(s). This is not found persuasive because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement.

The requirement is still deemed proper and is therefore made FINAL.

Response to Arguments

2. Applicant's arguments filed 9/29/2006 have been fully considered but they are not persuasive.

Applicant argued that claims 1-37 are statutory.

In response to applicant's argument, claims 1-37 recite "a computer readable medium". The medium, which stores non functional data, is defined a signal (In specification page 9). Thus, claims 1-37 are non-statutory.

Applicant argued that Colossi does not teach "standardized data representation of an object-relational data model, the standardized data representation configured to support an automatic derivation of a dimensional data model that corresponds to the object-relational data model".

In response to applicant's argument, Colossi teaches the multidimensional metadata object model is designed to describe the schemas used in relational databases to represent multidimensional data. For example, metadata objects 500 fit together in a cube model and map to a relational star schema of relational tables 550. The Cube model is represented a multidimensional object model. The relational star schema of relational tables 500 is represented as an object-relational data model (fig. 5, paragraphs [0078, 0089].

Applicant argued that Colossi does not teach "a standardized data representation being tied to an object-relational data model; standardized representation of an object-relational data model".

In response to applicant argument, Colossi teach the multidimensional metadata object model is designated to describes the schemas used in relational databases. The multidimensional metadata object model as a standardized data representation being tied to the schemas as object-relational data model (paragraph 0078).

Applicant argued that Colossi does not teach "automatic derivation of a dimensional model based on an object-relational data mode; automatic derivation of a dimensional data model based on the metadata object model".

In response to applicant's argument, Colossi teaches the multidimensional metadata object model is designed to describe the schemas used in relational databases to represent multidimensional data. The above information shows that

multidimensional data based on the multidimensional metadata object model (paragraph 0078).

Applicant argued that Colossi does not explicitly teach the claimed limitation "standardized data representation as including a description of objects and object relationship".

In response to applicant argument, Colossi teaches metadata objects 130 describe relationships between the base metadata objects 130 and link these base metadata objects 130 together. Ultimately, all of the metadata objects 130 can be grouped together by their relationships to each other, into a metadata object called a cube model. A cube model represents a particular grouping and configuration of relational tables. The purpose of a cube model is to describe OLAP structures to a given application or tool. A cube model groups dimensions and facts, and offers the flexibility of multiple hierarchies for dimensions. A cube model conveys the structural information needed by query design tools and applications that generate complex queries on star schema databases (paragraph 0077).

Applicant argued that the combination of references fails to teach claim 9.

In response, Rubendall teaches XML mapping of the object model that the object model contains four classes (paragraph [00553]). Thus, the combination of reference teaches the claim 9.

Applicant argued that Colossi does not teach "tagged format data schema related to an object-relational data model".

In response, Rubendall teaches a tagged format XML schema for representing an object model. The tagged format XML schema corresponds to the object model (paragraph [0053]).

Applicant argued that Colossi does not teach claim 10.

In response, As to claim 10, Rubendall teaches the claimed limitation "tagged format data schema for representing an object-relational data model, the tagged format data schema being configured to support an automatic derivation of a dimensional data model that corresponds to the object-relational data model" as a tagged format XML schema for representing an object model. The tagged format XML schema corresponds to the object model and not derivation of a dimensional data mode (paragraph [0053]). Rubendall does not explicitly teach the claimed limitation "to support an automatic derivation of a dimensional data model". Colossi teaches dimension metadata objects are connected to the facts metadata object in a cube model just as the dimension tables are connected to the fact table in a star schema (paragraph [0082]).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Colossi's teaching dimension metadata objects are connected to the facts metadata object in a cube model just as the dimension tables are connected to the fact table in a star schema to Rubendall's system in order to improve

performance of a object-relational database management system and produce multidimensional reports showing results with different levels of granularity by issuing multiple queries.

For the above information, the combination of references teaches claim 10.

Applicant argued that Colossi does not teach claim 27.

In response: As to claim 27, Rubendall teaches the claimed limitation "an XML data schema for representing an object-relational data model, the XML data schema being configured to support an automatic derivation of a dimensional data model that corresponds to the object-relational data model" as a tagged format XML schema for representing an object model. The tagged format XML schema corresponds to the object model and not derivation of a dimensional data mode (paragraph [0053]).

Rubendall does not explicitly teach the claimed limitation "to support an automatic derivation of a dimensional data model".

Colossi teaches dimension metadata objects are connected to the facts metadata object in a cube model just as the dimension tables are connected to the fact table in a star schema (paragraph [0082]).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Colossi's teaching dimension metadata objects are connected to the facts metadata object in a cube model just as the dimension tables are connected to the fact table in a star schema to Rubendall's system in order to improve performance of a object-relational database management system and produce

multidimensional reports showing results with different levels of granularity by issuing multiple queries.

For the above information, the combination of references teaches claim 27.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 1-37 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 1-9 recite "a standardized data representation that encoded in computer readable medium"; claims 10-26 recite "a tagged format data schema that encoded in computer readable medium"; claims 27-38 recite "an XML data schema that encoded in computer readable medium".

These claims lack the necessary physical articles or objects to constitute a machine or a manufacture within the meaning of 35 USC 101. They are clearly not a series of steps or acts to be a process nor are they a combination of chemical compounds to be a composition of matter. As such, they fail to fall within a statutory category. They are, at best, functional descriptive material *per se*.

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." Both types of "descriptive material" are nonstatutory when claimed as descriptive material *per se*, 33 F.3d at 1360, 31 USPQ2d at 1759. When functional descriptive material is recorded on some computer-readable medium, it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994)

Merely claiming nonfunctional descriptive material, i.e., abstract ideas, stored on a computer-readable medium, in a computer, or on an electromagnetic carrier signal, does not make it statutory. See *Diehr*, 450 U.S. at 185-86, 209 USPQ at 8 (noting that the claims for an algorithm in *Benson* were unpatentable as abstract ideas because "[t]he sole practical application of the algorithm was in connection with the programming of a general purpose computer.").

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-8 are rejected under 35 U.S.C. 102(e) as being anticipated by Colossi et al (or hereinafter "Colossi") (US 2004/0215626).

As to claim 1, Colossi teaches the claimed limitation "standardized data representation of an object-relational data model, the standardized data representation configured to support an automatic derivation of a dimensional data model that corresponds to the object-relational data model " as (paragraphs [0078, 0080, 0089]).

As to claim 2, Colossi teaches the claimed limitation "wherein the standardized data representation enables the object-relational data model to be specified and decorated with metadata so as to support the derivation of the dimensional model" as (paragraph [0081-0082]).

As to claim 3, Colossi teaches the claimed limitation "wherein the standardized data representation is configured to be processed by a processing engine that is adapted to autonomously derive the dimensional model" as (paragraphs [0081-0083]).

As to claim 4, Colossi teaches the claimed limitation "wherein the standardized data representation includes a description of objects and object relationships reflected in the object-relational data model" as (paragraph [0084, 0077]).

As to claim 5, Colossi teaches the claimed limitation "wherein the standardized data representation includes a description of persistent data store mappings associated with the object-relational data model" as (paragraphs [0089-0090]).

As to claim 6, Colossi teaches the claimed limitation "wherein the standardized data representation includes a description of at least one focal point that represents a point of analysis indicated in association with data in the object-relational data model" as (paragraphs [0091-0092, 0144]).

As to claim 7, Colossi teaches the claimed limitation "wherein the standardized data representation includes: a description of objects and object relationships reflected in the object-relational data model" as (paragraph [0091-0092]); and

"a description of persistent data store mappings associated with the object-relational data model" as (paragraphs (0089-0090)).

As to claim 8, Colossi teaches the claimed limitation "wherein the standardized data representation further comprises a description of at least one focal point that represents a point of analysis indicated in association with data in the object-relational data model" as (paragraphs [0089-0090, 0144]).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Colossi et al (or hereinafter "Colossi") (US 2004/0215626) in view of Rubendall (US 2005/0246370).

As to claim 9, Colossi does not explicitly teach the claimed limitation "a description of at least one data element selected from a group consisting of a class from the object-relational data model, a data member associated with a class from the object-relational data model, a collection of object-relational mappings that specify how data is

retrieved from a relational database, a field that uniquely identifies a class from the object-relational data model, an association relationship indicator that identifies a relationship among classes in the object-relational data model, a composition relationship indicator that identifies a relationship among classes in the object-relational data model, and a measure that identifies an interesting numerical value used for generation of the dimensional model".

Rubendall teaches XML mapping of the object model that the object model contains four classes (paragraph [00553]).

It would have been obvious to a personal of an ordinary skill in the art at the time the invention was made to apply Rubendall's teaching of XML mapping of the object model that the object model contains four classes to Colossi's system in order to allows the object package to be searched at the server-side using XML.

9. Claims 10-15, 18-32, 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rubendall (US 2005/0246370) in view of Colossi et al (or hereinafter "Colossi") (US 2004/0215626).

As to claim 10, Rubendall teaches the claimed limitation "tagged format data schema for representing an object-relational data model, the tagged format data schema being configured to support an automatic derivation of a dimensional data model that corresponds to the object-relational data model" as a tagged format XML schema for representing an object model. The tagged format XML schema corresponds to the object model and not derivation of a dimensional data mode (paragraph [0053]).

Rubendall does not explicitly teach the claimed limitation "to support an automatic derivation of a dimensional data model".

Colossi teaches dimension metadata objects are connected to the facts metadata object in a cube model just as the dimension tables are connected to the fact table in a star schema (paragraph [0082]).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Colossi's teaching dimension metadata objects are connected to the facts metadata object in a cube model just as the dimension tables are connected to the fact table in a star schema to Rubendall's system in order to improve performance of a object-relational database management system and produce multidimensional reports showing results with different levels of granularity by issuing multiple queries.

As to claims 11 and 28, Rubendall teaches the claimed limitation "wherein the schema includes a tag used to indicate a class in the object-relational data model" as (paragraph [0053]).

As to claims 12 and 29, Rubendall teaches the claimed limitation "wherein the schema includes a tag for indicating a data member associated with a class in the object-relational data model" as (paragraph [0065]).

As to claims 13 and 30, Rubendall teaches the claimed limitation "wherein the schema includes means for indicating a collection of object-relational mappings that specify how a data member associated with a class in the object-relational data model can be filled with data retrieved from at least one table in a relational database" as (paragraph [0060-0064]).

As to claims 14 and 31, Rubendall teaches the claimed limitation "wherein the schema includes a tag for indicating a key field that uniquely identifies a class included in the object-relational data model" as (paragraph [0060-0064]).

As to claims 15 and 32, Rubendall teaches the claimed limitation "wherein the schema includes a tag for indicating a name field that uniquely identifies an instance of a class included in the object-relational data model." as (paragraph [0060-0064]).

As to claims 18 and 35, Rubendall and Colossi teaches the claimed limitation subject matter in claim 10, Colossi further teaches "wherein the schema includes a tag for indicating a measure, a measure being an interesting numerical value used for generation of the dimensional model" as (paragraph [0159]).

As to claims 19 and 36, Rubendall and Colossi teaches the claimed limitation subject matter in claim 10, Colossi further teaches, wherein the schema enables the

object-relational data model to be specified and decorated with metadata so as to support the derivation of the dimensional model" as (paragraphs [0112, 0113]).

As to claim 20, Rubendall and Colossi teaches the claimed limitation subject matter in claim 10, Colossi further teaches "wherein the schema is configured to be processed by a processing engine that is adapted to autonomously derive the dimensional model" as (paragraph [0078]).

As to claim, 21, Rubendall teaches the claimed limitation "wherein the schema includes a description of objects and object relationships reflected in the object-relational data model" as (paragraphs [0060-0064, 0035-0040]).

As to claims 22 and 37, Rubendall teaches the claimed limitation "wherein the schema includes a description of persistent data store mappings associated with the object-relational data model" as ((paragraphs [0060-0064, 0035-0040]).

As to claim 23, Rubendall teaches the claimed limitation "wherein the schema includes a description of at least one focal point that represents a point of analysis indicated in association with data in the object-relational data model" as (paragraphs [0060-0064, 0035-0040]).

As to claim 24, Rubendall teaches the claimed limitation "wherein the schema includes: a description of objects and object relationships reflected in the object-relational data model; and a description of persistent data store mappings associated with the object-relational data model" as (paragraphs [0060-0064, 0035-0040]).

As to claim 25, Rubendall teaches the claimed limitation "wherein the schema further comprises a description of at least one focal point that represents a point of analysis indicated in association with data in the object-relational data model" as (paragraphs [0060-0064, 0035-0040]).

As to claim 26 , Rubendall teaches the claimed limitation "wherein the schema comprises a description of at least one data element selected from a group consisting of a class from the object-relational data model, a data member associated with a class from the object-relational data model, a collection of object-relational mappings that specify how data is retrieved from a relational database, a field that uniquely identifies a class from the object-relational data model, an association relationship indicator that identifies a relationship among classes in the object-relational data model, a composition relationship indicator that identifies a relationship among classes in the object-relational data model, and a measure that identifies an interesting numerical value used for generation of the dimensional model" as (paragraph [0053]).

As to claim 27, Rubendall teaches the claimed limitation "an XML data schema for representing an object-relational data model, the XML data schema being configured to support an automatic derivation of a dimensional data model that corresponds to the object-relational data model" as a tagged format XML schema for representing an object model. The tagged format XML schema corresponds to the object model and not derivation of a dimensional data mode (paragraph [0053]).

Rubendall does not explicitly teach the claimed limitation "to support an automatic derivation of a dimensional data model".

Colossi teaches dimension metadata objects are connected to the facts metadata object in a cube model just as the dimension tables are connected to the fact table in a star schema (paragraph [0082]).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Colossi's teaching dimension metadata objects are connected to the facts metadata object in a cube model just as the dimension tables are connected to the fact table in a star schema to Rubendall's system in order to improve performance of a object-relational database management system and produce multidimensional reports showing results with different levels of granularity by issuing multiple queries.

10. Claims 16-17 and 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rubendall in view of Colossi and further in view of Wang (US 6907433).

As to claims 16 and 33, Rubendall does not explicitly teach the claimed limitation "wherein the schema includes a tag for indicating an association relationship among multiple classes in the object-relational data model".

Wang teaches to manipulate target objects and relationships in a relational database when a source object having a one-to-many relationship of privately owned type with the target objects is manipulated. To generate instructions, it uses mapping meta-data which contains information as to how object classes of the object model map to tables in the database and how relationships map to foreign keys (col. 2, lines 5-10).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Wang's teaching of relationship among multiple classes into Rubendall's system to provide a method for managing object to relational one-to-many mapping for an object model mapped to a relational database correctly.

As to claims 17 and 34, Rubendall teaches the claimed limitation "wherein the schema includes a tag" as (paragraph [0053]).

Rubendall does not explicitly teach "for indicating a composition relationship among multiple classes in the object-relational data model".

Wang teaches to manipulate target objects and relationships in a relational database when a source object having a one-to-many relationship of privately owned type with the target objects is manipulated. To generate instructions, it uses mapping meta-data which contains information as to how object classes of the object model map to tables

in the database and how relationships map to foreign keys (col. 2, lines 5-10).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Wang's teaching of relationship among multiple classes into Rubendall's system to provide a method for managing object to relational one-to-many mapping for an object model mapped to a relational database correctly.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cam Y T. Truong whose telephone number is (571) 272-4042. The examiner can normally be reached on Monday to Firday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene can be reached on (571) 272-4107. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Cam Y Truong
Primary Examiner
Art Unit 2162
6/23/2006